

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Masaaki OYAMADA et al.                      Art Unit: 1792  
Application No.: 10/820,024                                  Examiner: Tsoy Lightfoot, E.  
Filing Date: April 8, 2004  
Title : CONDUCTIVE ELECTROLESSLY PLATED POWDER AND  
METHOD FOR MAKING SAME

Commissioner for Patents  
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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Sir:

In response to the final Office Action dated May 15, 2009, applicants respectfully request a pre-appeal brief for review of the pending rejections. This request is being filed with a Notice of Appeal.

Claims 3, 5, 7 and 9-41 were rejected under 35 USC 103(a) as being obvious over Kawakami et al. (JP 1-242782). Also, claims 3, 5, 7 and 9-41 were rejected under 35 USC 103(a) as being obvious over Kawakami et al. in view of Kaneyoshi (U.S. Patent Application Publication No. 2001-0055685). Also, claims 3, 5, 7 and 9-41 were rejected under 35 USC 103(a) as being obvious over Kawakami et al. or Kawakami et al. in view of Kaneyoshi and further in view of Svendsen et al. (U.S. Patent No. 5,262,718). Further, claims 3, 5, 7 and 9-41 were rejected under 35 USC 103(a) as being obvious over Kawakami et al. or Kawakami et al. in view of Kaneyoshi or over Kawakami et al. in view of Svendsen et al. or Kawakami et al. in view of Kaneyoshi, further in view of Svendsen et al., and further in view of Weber et al. (U.S. Patent No. 6,274,241). Further, claims 3, 5, 7 and 9-41 were rejected under 35 USC 103(a) as being obvious over the cited prior art as applied above and further in view of Segawa et al. (JP 2001-316834).

Applicants respectfully submit that the final rejection of claims 3, 5, 7, and 9-41 is improper for the following reasons. Specifically, 1) claim elements are clearly not present in the applied art and 2) they are not included in the Examiner's analysis and 3) no evidentiary basis for a 35 USC 103 motivation is provided in the rejections related to the missing elements. For purposes of these arguments, only independent claims 3, 16, 33, 34 and 40 will be addressed. Applicants reserve their right to argue the patentability of the dependent claims

on appeal and the arguments presented in applicants' previous submissions are hereby incorporated by reference.

The presently claimed invention relates to a conductive electroless plated powder and a method for making the same. In the nickel film of the plated powder of the present invention, many columnar structures extending in the direction of the thickness gather tightly to form a dense, homogeneous, and continuous film as shown in Fig. 1. In the nickel film having the claimed columnar structures as shown in Fig. 1, unexpected results have been found which include that the heat resistance is high and the conductivity of the plated powder is not really decreased even under high temperature conditions (see page 5, lines 9-19 of the specification).

The present invention discloses three main steps for performing electroless plating on a core particle to obtain columnar structures not previously known or obvious. The first step is a catalyzation step (I) that reduces the noble metal ions so that the surfaces of the core particles support the noble metal.

The present invention also discloses an initial thin film formation step (II) that adds a slurry, which includes the core particles prepared by the step of (I), to an initial thin film-forming solution containing nickel ions, a reducing agent, and a complexing agent comprising an amine to prepare an aqueous suspension, dispersing the core particles in the initial thin film-forming solution, and reducing the nickel ions to form initial thin nickel film on a surface of each of the core particles.

In the third step, the electroless plating step (III), a first solution, which contains a nickel ion-containing solution and the complexing agent, and a second solution, which contains a reducing agent, are added to the aqueous suspension individually and simultaneously. The aqueous suspension contains the core particles provided with the initial thin nickel films and the complexing agent to perform electroless plating so that columnar structures extending in a direction of a thickness of a nickel film are formed.

Specifically, independent claims 3, 16, 33, 34 and 40 all recite the above described features, and these features are not shown or suggested by the cited art. Also, none of the cited references show, disclose or teach any columnar structures (or any columnar structures that extend in a direction of a thickness of a nickel film) are formed in the nickel film of the plated powder as shown in Fig. 1 of the present invention.

Since Kaneyoshi, Svendsen et al., Weber et al. and Segawa et al. are the secondary references in the rejections and these references do not show or suggest the presently claimed invention (and because of the page limit), for purposes of applicant's main arguments herein, only the rejections based on Kawakami et al. and Kawakami et al. in view of Svendsen et al. will be addressed in below.

Kawakami et al. disclose the step of adding at least two solutions constituting the electroless plating solution individually and simultaneously to the aqueous suspension to perform an electroless plating (see page 18, line 23 - page 19, line 6 of the translation).

Applicants respectfully submit that Experiment 1 of the Declaration under 37 CFR 1.132 filed on October 26, 2007 clearly proves that the columnar structures extending in a direction of a thickness of a nickel film are not formed on the surface of the core powder by using the method described in Kawakami et al. The method of Kawakami et al. produces only a nickel film of electroless nickel plated powder pieces that are randomly located thereon (as shown in Fig. 1 of the Declaration under 37 CFR 1.132 filed on October 26, 2007).

Applicants note that in the office action mailed on August 15, 2008, the Examiner admitted that Kawakami et al. failed to teach that one more plated nickel layer is applied over the plated nickel layer. However, the Examiner believed that it was a well-know principle to reapply a coating composition to achieve a desired thickness of a final coating depending on the intended use of the final coated product.

Applicants respectfully submit that even if the method of Kawakami et al. was repeated to reapply a second nickel film layer over the applied nickel film layer in Kawakami et al., this process would not

make any columnar structures of nickel (or even any columnar structures extending in a direction of a thickness of a nickel film) as claimed in the present invention because the same result of Experiment 1 of the Declaration under 37 CFR 1.132 filed on October 26, 2007 was repeated to reapply (or continue to grow) over the first nickel film layer. In other words, by repeating the method of Kawakami et al., the second nickel film layer was just random pieces of nickel powder that were over the random located first nickel powder particles.

On the other hand, the method of the present invention has the initial thin film formation step (the claimed step II) for uniformly and smoothly forming an initial thin nickel film, and the electroless plating step (the claimed step III) for performing electroless plating because the present invention intends to make columnar structures extending in a direction of a thickness of a nickel film (not controlling the desired thickness of the final coating as discussed by the Examiner).

Also, the present invention discloses that the complexing agent used in step (II) and the complexing agent used in step (III) are the same type of complexing agent. Applicants respectfully submit that the method of producing a conductive electroless plated powder described in the presently claimed invention is different from the method described in Kawakami et al.

Applicants also note that in the office action mailed on May 15, 2009, the Examiner believed that it would have been obvious to have reapplied a plated nickel layer in Kawakami et al. according to the method of Svendsen et al.

Applicants respectfully submit that as discussed above, even though the method of Kawakami et al. might be repeated to reapply a second nickel film layer over the applied nickel film layer in Kawakami et al., this reapplication would not make any columnar structures of nickel or even columnar structures of nickel extending in a direction of a thickness of a nickel film as claimed in the present invention.

In addition, applicants respectfully submit that the method of Kawakami et al. teaches away from the method discussed in Svendsen et al.

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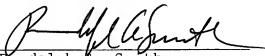
because Kawakami et al. disclose that the thickness of the plating film can be controlled based on the amount of addition (see page 21, lines 11-13 of the translation). In other words, the method of Kawakami et al. adds the plating solution in the aqueous suspension only one time (not two times) and controls the exact thickness of the plating film based on adjusting the specific amount of addition that is added that one time.

On the other hand, Svendsen et al. disclose that the thickness of the metal layer inside the pores is enhanced by re-applying electroless plating to the membrane until the desired thickness has been reached (see col. 5, lines 55-57). Applicants respectfully submit that the method of Kawakami et al. teaches away from using the method discussed in Svendsen et al. because the desired thickness in Kawakami et al. is reached by adding the plating solution in the aqueous suspension only one time based on adjusting the amount of addition. Clearly, Kawakami et al. does not need to reapply electroless plating multiple times as discussed in Svendsen et al. to reach the desired thickness.

In view of arguments presented above, applicants respectfully submit that the Examiner has improperly combined Kawakami et al. with Svendsen et al. and the other cited references to reject independent claims 3, 16, 33, 34 and 40. Also, applicants respectfully submit that the rejections made in the final office action are in error and therefore should be withdrawn.

Respectfully submitted,

Date: September 16, 2009

  
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